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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/737,189

12/15/2003

Jakke Makela

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EXAMINER

BRADLEY, MATTHEW A

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,189	MAKELA ET AL.	
	Examiner	Art Unit	
	Matthew Bradley	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/1/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 1 June 2004 was filed after the mailing date for application 10/737,189. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner is considering the information disclosure statement with a signed and initialed copy being attached hereto.

Claim Status

Claims 1-18 remain pending and are ready for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Spilo (U.S. 5,559,978) herein after referred to as Spilo.

As per independent claim 1, Spilo teaches,

- determining whether additional memory space is needed in said memory;
(Column 3 lines 39-46)
- if additional memory space is needed, compressing selected portions of memory content stored in said memory; and (Column 3 lines 54-56)

- o releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space (Column 3 lines 48-50).

As per independent claim 16, Spilo teaches,

- o a monitoring component monitoring whether additional memory space is needed in said memory; and (Column 3 line 63 to Column 4 line 12)
- o a compression component compressing selected portions of memory content stored in said memory, in case said monitoring component determines that additional memory space is needed, and (Column 4 lines 13-29)
- o releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space (Column 3 lines 48-50).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spilo and in view of Tremaine (U.S. 6,775,751) herein after referred to as Tremaine.

Spilo teach the limitations as noted supra.

Spilo does not teach utilizing compression tables.

Tremaine teaches, wherein a plurality of fixed compression tables are defined for realizing said compression, each fixed compression table associating possible values of memory content to values of a compression code, said method further comprising associating to a respective portion of memory content the fixed compression table resulting in the highest compression when applied to this portion of memory content (Column 5 lines 35-54). *The Examiner notes that the system of Tremaine has a compressor that operates on a fixed block size which locates and replaces strings within a block with a pointer that thereby decreases the size of the block. The comparisons are made and the compressed memory manager is adapted to compress data blocks having a higher compressibility before compressing data blocks having a lower compressibility (Column 3 lines 48-51) of Tremaine). Thus, a respective portion of memory, block, is compressed resulting in the highest compression when the compression is made.*

Spilo and Tremaine are analogous are because they are from the same field of endeavor, namely compression of memory.

At the time of invention it would have been obvious to one of even rudimentary skill in the art, having both the teachings of Spilo and Tremaine before him/her to combine the compression method of Tremaine into the system of Spilo to prevent the compression of data blocks that do not have a high degree of compressibility.

The suggestion for doing so would have been that, "to mitigate needless compression activity on poorly compressible data blocks later on" (Column 2 lines 48-50 of Tremaine).

Therefore, it would have been obvious to combine Spilo with Tremaine for the benefit of not compressing data blocks that do not have a high degree of compressibility to obtain the invention as specified in claims 2-15.

As per dependent claim 3, Tremaine teaches, wherein said fixed compression tables are predetermined (Column 5 lines 35-41). *The Examiner notes that the pointers used to replace the data are predetermined.*

As per dependent claim 4, Tremaine teaches, wherein said fixed compression tables are generated at an initialization of said memory based on available portions of memory content (Column 7 lines 18-22).

As per dependent claim 5, Tremaine teaches, wherein said fixed compression tables are updated at regular intervals based on available portions of memory content (Column 8 lines 21-28).

As per dependent claim 6, Tremaine teaches, wherein in addition to said fixed compression tables, a null-table is provided which can equally be associated to a respective portion of memory content and which causes that no modification is applied to a selected portion of memory content to which said null-table is associated (Column 8 lines 29-35).

As per dependent claim 7, Tremaine teaches, wherein in addition to said fixed compression tables, an own-compression-table is provided which can equally be associated to a respective portion of memory content and which indicates that a portion of memory content to which it is associated has its own compression algorithm co-located and that this own compression algorithm is to be used for a compression of said

portion of memory content when selected (Column 8 lines 29-58). *The Examiner notes that a degree of compressibility as taught by Tremaine is associated with the data blocks. Accordingly, the compressor gets this degree of compressibility and as such has a predetermined amount of compressibility or own compression algorithm used for compression.*

As per dependent claim 8, Tremaine teaches, wherein a fixed compression table is associated to a respective portion of memory content when said portion of memory content is written into said memory (Column 11 lines 12-17).

As per dependent claim 9, Tremaine teaches, wherein a fixed compression table is selected for association to a particular portion of memory content based on samples of said particular portion of memory content (Column 11 lines 12-17). *The Examiner notes that Tremaine teaches that the detector can be enhanced to detect any repeating fixed length pattern. Accordingly, the system of Tremaine by use of the detector, associates a compression for a particular portion of memory content based on samples of said particular portion of memory content, or fixed length patterns.*

As per dependent claim 10, Spilo teaches, wherein portions of memory content are selected for compression which belong to a currently inactive process (Column 3 lines 12-15). *The Examiner notes that regions (portions) are determined to be non-critical. These regions are then compressed. Accordingly, regions that are non-critical belong to a process that is currently inactive.*

As per dependent claim 11, Spilo teach, wherein different priorities are assigned to different portions of memory content, and wherein those portions of memory content

are selected for compression to which the lowest priority has been assigned among all uncompressed portions of memory content (Column 3 lines 12-15). *The Examiner incorporates herein by reference the comments made supra with respect to dependent claim 10.*

As per dependent claim **12**, Tremaine teaches, further comprising monitoring whether sufficient memory space is available in said memory and decompressing compressed portions of memory content of said memory as soon as sufficient memory space is available in said memory (Column 3 lines 57-58).

As per dependent claim **13**, Spilo teaches, further comprising decompressing a compressed portion of memory content of said memory as soon as a process to which said compressed portion of memory content belongs becomes active (Column 4 lines 38-45).

As per dependent claim **14**, Tremaine teaches, further comprising when reporting to an application the status of the memory, reporting a status which would be given in case of a completely decompressed memory content (Column 9 lines 45-51).

As per dependent claim **15**, Tremaine teaches, wherein said memory is an executable memory, to which said portions of memory content are provided by a solid-state memory based on demand paging (Column 5 lines 20-34).

As per independent claim **17**, the combination of Spilo and Tremaine teaches,

- a memory; and (Column 5 line 20 of Tremaine)
- a memory manager monitoring whether additional memory space is needed in said memory, compressing selected portions of memory

content stored in said memory, in case it is determined that additional memory space is needed, and (Column 5 line 35 of Tremaine taught as the compressor)

- o releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space (Column 3 lines 48-50 of Spilo).

Spilo and Tremaine are analogous are because they are from the same field of endeavor, namely compression of memory.

At the time of invention it would have been obvious to one of even rudimentary skill in the art, having both the teachings of Spilo and Tremaine before him/her to combine the compression method of Tremaine into the system of Spilo to prevent the compression of data blocks that do not have a high degree of compressibility.

The suggestion for doing so would have been that, "to mitigate needless compression activity on poorly compressible data blocks later on" (Column 2 lines 48-50 of Tremaine).

Therefore, it would have been obvious to combine Spilo with Tremaine for the benefit of not compressing data blocks that do not have a high degree of compressibility to obtain the invention as specified in claim 17.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spilo in view of Rubinstein, (U.S. 5,913,215) herein after referred to as Rubinstein.

Spilo does not expressly teach that a method is performed by a software series of instructions, instead disclosing the method.

Rubinstein teaches on Column 10 lines 3-15 that computer methods may be performed either by a series of instructions, or by specific hardware components that contain hard-wired logic for performing the method, or by any combination of the two.

Spilo and Rubinstein are analogous art because they are from the same general field of endeavor, namely computer-controlled methods.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Gibson by embodying it in executable instructions.

The motivation for doing so is portability and ease of installation. For example, it is well known that a method encoded in a program may be installed onto different systems much more quickly and easily than can hardware components designed to perform the same method.

Therefore, it would have been obvious to combine Spilo with Rubinstein for the benefits shown above, to obtain the invention as specified in claims 18.

As per independent claim 18, the combination of Spilo and Rubinstein teach,

- determining whether additional memory space is needed in said memory;
(Column 3 lines 39-46)
- if additional memory space is needed, compressing selected portions of memory content stored in said memory; and (Column 3 lines 54-56)
- releasing memory space which is no longer needed by said compressed selected portions of memory content for use as virtual memory space
(Column 3 lines 48-50).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. U.S. 6,968,424 Danilak teaches a transparent to the operating system memory compression system.

2. U.S. 5,850,565 Wightman teaches a data compression system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Bradley whose telephone number is (571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DAS/mb



DONALD SPARKS
SUPERVISORY PATENT EXAMINER